

WE CLAIM:

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5 1. A filter underdrain assembly for  
controlling backwash water flow from a backwash water inlet  
comprising a plurality of panel members forming a grid like  
underdrain, each panel member having a plurality of  
apertures, the cross-sectional area of said apertures in  
said panel members varying between said panel members, said  
apertures of said panel members being located further away  
from said backwash water inlet having a lesser cross-  
10 sectional area relative to said cross-sectional area of said  
apertures of said panel members closer to said backwash  
water inlet.

15 2. A filter underdrain assembly as in claim  
1 wherein said apertures in said panel members are elongate  
slots.

3. A filter underdrain assembly as in claim  
2 and further comprising an air passageway in said panel  
members.

20 4. A filter underdrain assembly as in claim  
3 wherein said panel member has upper and lower surfaces,  
said air passageway releasing air below said upper surface  
of said panel member.

25 5. A filter underdrain assembly as in claim  
3 wherein said air passageway releases air above said upper  
surface of said panel member.

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6. A filter underdrain assembly as in claim 3 wherein said air passageway takes the form of a hat section, said hat section having perforations positioned below said upper surface of said panel member.

5 7. A filter underdrain assembly as in claim 3 wherein said air passageway takes the form of a hat section, said air passageway having perforations extending through said upper surface of said panel member.

10 8. A panel member for controlling backwash water flow from underdrain blocks of an underdrain filter assembly, said panel member having a plurality of apertures therein of predetermined cross-sectional area to allow passage of water therethrough, an attachment for mechanically positioning said panel member on said  
15 underdrain filter assembly and a sealing member to provide a substantially watertight seal between said panel member and said underdrain filter assembly.

20 9. A panel member as in claim 8 and further comprising an air passageway and perforations in said air passageway for releasing air under pressure from said air passageway.

10. A panel member as in claim 9 wherein said perforations in said air passageway are located below the upper surface of said panel member.

25 11. A panel member as in claim 9 wherein

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said perforations in said air passageway extend through the upper surface of said panel member.

12. A panel member as in claim 9 wherein said perforations take the form of elongate slots.

5            ~~13.~~ Apparatus for determining backwash water flow distribution through an underdrain assembly comprising a substantially watertight housing for removable attachment to said underdrain assembly, a seal between the lower end of said housing and said underdrain and an indicator to measure the rise and fall of water within said housing responsive to water introduced to said housing from said underdrain.

10            ~~14.~~ Method of measuring backwash water flow through a filter underdrain assembly comprising the steps of removably attaching at least one housing to said underdrain, initiating a backwash cycle and measuring the rate of water flow from said underdrain into said housing.

15            15. Method as in claim 14 wherein said rate of water flow into said housing is measured by the rise of water within said housing.

20            16. Method as in claim 15 wherein said rise of water is measured by a float.

17. Method as in claim 14 wherein said one housing is connected nearer to a water inlet for said underdrain and further comprising a second housing connected

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to said underdrain at a location relatively further from said water inlet for said underdrain.

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5 18. Filter underdrain apparatus for  
controlling backwash water flow maldistribution from a  
backwash water inlet in an underdrain assembly comprising a  
plurality of panel elements assembled adjacent each other to  
form a grid like underdrain, each panel element having  
multiple punched bridges in a surface thereof, each bridge  
defining a pair of water inlet/outlet slotted apertures and  
10 wherein the number and size of said punched bridges and  
slotted apertures respectively can be varied from panel  
element to panel element, said panel elements furthest away  
from said backwash water inlet having a lesser number of  
bridges or smaller slotted apertures from said panel  
15 elements nearer to said backwash water inlet, said panel  
elements being operable to provide a substantially equalised  
water flow through the underdrain assembly from said panel  
elements.

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20 19. Apparatus according to claim 18 wherein  
said multiple punched bridges are sized to substantially  
prevent the passage of filter media therethrough.

25 20. Apparatus according to claim 19 and  
further comprising an attachment for attaching each of said  
panel elements to adjacent panel elements and securing said  
panel members to said underdrain.

21. Apparatus according to claim 20 and

further comprising a seal for forming a substantially watertight seal between a surface of each of said panel elements and said underdrain.

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22. Apparatus according to claim 8 wherein said panel member comprises a generally rectangular open box structure defined by a pair of parallel side walls, a pair of parallel end walls transverse to said side walls and a generally flat surface member communicating with the side and end walls along one edge thereof.

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23. Apparatus according to claim 22 and further comprising a perimeter flange of generally "L" shaped cross-section extending perpendicularly outward from said side and end walls of said panel member, said perimeter flange having a vertical wall, said vertical wall being substantially parallel to the side and end walls of said panel member.

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24. Apparatus according to claim 23 and further comprising a seal attached to said flat surface of said perimeter flange.

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25. Apparatus according to claim 24 wherein said bridges are punched into said surface of said panel member so as to form a convex bridge in said upper surface of said panel member, said convex bridges being arranged in rows and columns.

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Filter underdrain assembly for

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5 controlling backwash water flow from a backwash water inlet comprising a plurality of panel members forming a grid like underdrain, each panel member having a plurality of apertures, the number or cross-sectional area of said apertures varying between said panel members, said panel members located further away from said backwash water inlet having a lesser number or smaller cross-sectional area of said apertures relative to said panel members located closer to said backwash water inlet, said panel members being

10 operable to substantially equalize water flow from each of said panel members of said filter underdrain assembly.

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15 27. Filter underdrain panel member for controlling backwash water flow from underdrain blocks, said panel member having a predetermined number of apertures therein to allow passage of water therethrough, an attachment for mechanically positioning said panel member on said underdrain blocks and a sealing member to provide a substantially watertight seal between said panel member and said underdrain block.

20 28. Filter underdrain assembly comprising an arch extending longitudinally in said underdrain assembly from a water inlet generally located adjacent one end of said arch, said arch being positioned above said underdrain assembly and allowing water from said water inlet to enter

25 the interior of said arch, said arch having a plurality of perforations extending the length of said arch, said plurality of perforations having larger cross-sectional area nearer said water inlet, said plurality of perforations

having smaller cross-sectional area further from said water inlet.

29 Filter underdrain assembly as in claim  
28 wherein said perforations are elongate slots, the number  
of elongate slots at said one end of said arch adjacent said  
water inlet being greater than the number of said elongate  
slots adjacent said end opposite said one end.

30. Filter underdrain assembly as in claim 29 wherein said elongate slots are punched in a plurality of plates individually removable from said arch.

31. Filter underdrain assembly as in claim 29 wherein said elongate slots are punched directly into said arch, said slots nearer said water inlet having a greater cross-sectional area than said slots further from said water inlet.

32. Filter underdrain assembly as in claim 31 wherein said elongate slots are generally horizontal.

33. Filter underdrain assembly as in claim 31 wherein said elongate slots are generally vertical.

34. Filter underdrain assembly as in claim 28 and further considering an air passageway in said arch.

35 Method of equalizing backwash water flow  
in a filter underdrain assembly having a water inlet and a

5 plurality of blocks located relatively closer and relatively  
further from said water inlet, said plurality of blocks  
having an upper surface and a water passageway, holes  
extending between said water passageway and said upper  
surface, said method comprising blocking a predetermined  
number of said holes in a specific number of said blocks  
such that the quantity of water flowing from said upper  
surface of said blocks located relatively closer to said  
water inlet is substantially similar to said quantity of  
10 water flowing from said blocks located relatively further  
from said water inlet.

36. Method as in claim 35 and further  
comprising positioning panel members over said upper surface  
of said blocks.

15 37. Method as in claim 36 and further  
comprising apertures in said panel members.

38. Method as in claim 37 wherein said  
apertures are elongate slots.

20 39. Method as in claim 37 wherein the cross-  
sectional area of all said apertures in each of said panel  
members is substantially equal.

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